



California Water Plan Update 2013 Groundwater Caucus Meeting

Groundwater Content Enhancement

Deliverable #6:

Inventory and Describe Potential for Conjunctive
Management of Groundwater and Other Supplies

April 27, 2012



Deliverable #6: Conjunctive Management Potential

Three Main Goals:

1. Inventory existing conjunctive use, recharge and groundwater banking projects
2. Determine future conjunctive management potential
3. Define constraints



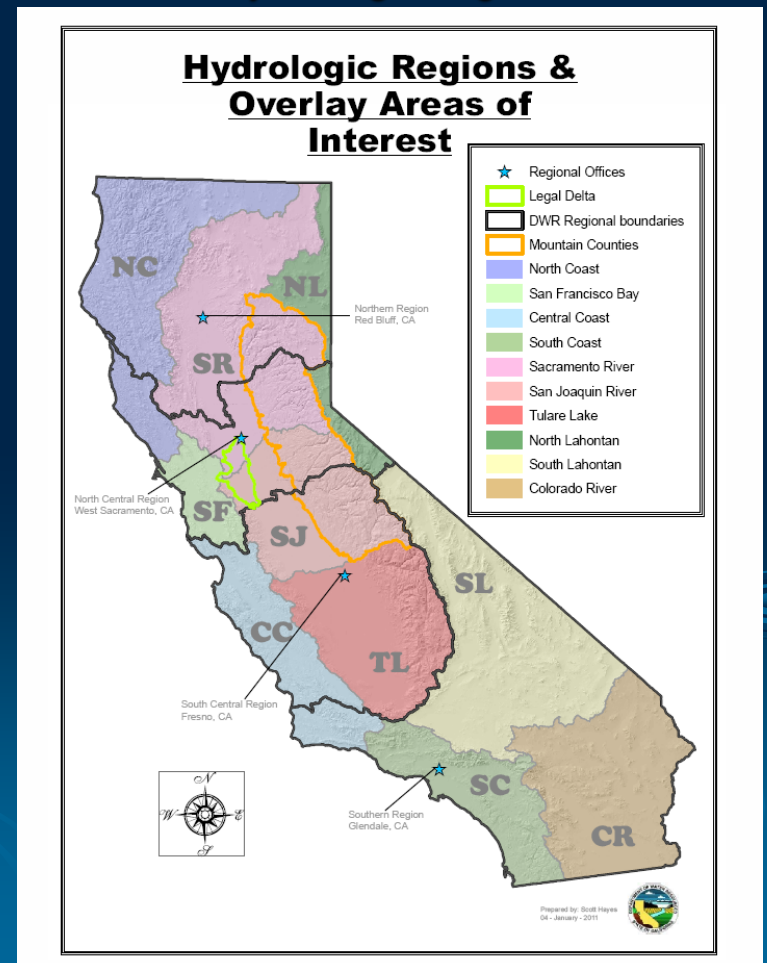
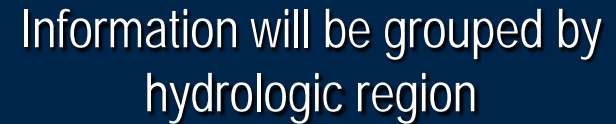
Deliverable #6:

Conjunctive Management Potential

Goal 1: Inventory Existing Recharge, Conjunctive Use and Groundwater Banking Projects

- ❑ Data Gathering – Published Sources
- ❑ Data Gathering – Review Past Surveys of Groundwater Banks
- ❑ Partnership with ACWA to update survey information
 1. Online survey for ACWA member agencies
 2. Distributed questionnaire to agencies at a recharge conference
 3. Conducted telephone interviews
 4. Ongoing data collection

Research conducted by DWR's four regional offices



Deliverable #6:

Goal 1

ACWA Online Survey Questions

1. Location of Project (groundwater basin level information)
2. Year Project Developed
3. Capital Costs to Develop Project
4. Annual Operating Costs (O&M)
5. Administrator/Operator of the Project
6. Capacity of the Project in Acre Feet

Deliverable #6:

Goal 1

DWR Supplemental Survey Questions

1. Water received
 - ❑ SWP, CVP, recycled water, local surface water, other
2. Put and take capacity of the groundwater bank
 - ❑ Annual and cumulative put and take, dry year take
3. Type of groundwater bank
 - ❑ Direct percolation, in-lieu, ASR, other
4. Program goals and objectives
 - ❑ Overdraft, salinity intrusion, water quality improvement, climate change
5. Constraints on development of the banking program
 - ❑ Political, legal, institutional, limited aquifer space, water quality, cost

List of Groundwater Banking Agencies – Northern Region Office

0 (Zero)

List of Groundwater Banking Agencies – North Central Region Office

1. Zone 7 Water Agency
2. Santa Clara Valley Water District
3. Alameda County Water District
4. East Bay Municipal Utilities District
5. Stockton East Water District
6. Northeastern San Joaquin County Groundwater Banking Authority
7. Sacramento Suburban Water District
8. Yuba County Water Agency
9. City of Roseville

List of Groundwater Banking Agencies – South Central Region Office

1. Berrenda Mesa Water District
2. Kings County Water District
3. Tehachapi-Cummings County Water District
4. Monterey Peninsula Water Management District
5. Alta Irrigation District
6. Arvin Edison Water Storage District
7. Semitropic Water Storage District
8. City of Bakersfield
9. Henry Miller Water District
10. Irvine Ranch
11. Rosedale-Rio Bravo Water Storage District
12. Madera Irrigation District
13. Buena Vista Water Storage District
14. Delano Earlimart Irrigation District
15. Kaweah Delta WCD
16. Kern County Water Agency
17. Kern Delta Water District
18. Kern Water Bank Authority
19. North Kern Water Storage District
20. Tehachapi-Cummings County Water District
21. Tejon-Castac Water District
22. West Kern Water District
23. Pajaro Valley Water Management Agency

List of Groundwater Banking Agencies – Southern Region Office

- | | | |
|--|---|---|
| 1. Goleta Water District | 15. La Verne, City of | 28. United Water Conservation District |
| 2. Santa Barbara, City of, Water Resources Division | 16. Long Beach Water Department | 29. Upper Los Angeles River Area (ULARA) Watermaster |
| 3. Coachella Valley Water District | 17. Long Beach Water Department and City of Lakewood | 30. Water Replenishment District of Southern California |
| 4. Calleguas Municipal Water District | 18. Los Angeles County Department of Public Works | 31. West Basin Municipal Water District |
| 5. Camp Pendleton | 19. Main San Gabriel Basin Watermaster | 32. Western Municipal Water District |
| 6. Chino Basin Watermaster | 20. Orange County Water District | 33. Antelope Valley-East Kern Water Authority |
| 7. Compton Water Department | 21. Rancho California WD | 34. Mojave Water Agency |
| 8. Cucamonga County Water District | 22. Raymond Basin Management Board | 35. Castaic Lake Water Agency |
| 9. Eastern Municipal Water District | 23. San Bernardino Valley MWD | 36. Metropolitan Water District |
| 10. Elsinore Valley Municipal Water District | 24. San Bernardino Valley Water Conservation District | 37. Oxnard, City of |
| 11. Foothill Municipal Water District | 25. San Diego, City of, Public Utilities Department | |
| 12. Helix Water District [El Monte Valley] | 26. Sweetwater Authority | |
| 13. Inland Empire Utilities Agency | 27. Three Valleys Municipal Water District | |
| 14. Inland Empire Utilities Agency; Three Valleys MWD; Chino Basin Watermaster | | |

Deliverable #6: Status of Survey

- ❑ 12 Responses to ACWA Survey
- ❑ 22 Full Response to DWR Survey/Interview
- ❑ 100 Known agencies with Conjunctive Management, GW Banking, GW Recharge Projects
 - ❑ NRO: 0
 - ❑ NCRO: 9
 - ❑ SCRO: 50
 - ❑ SRO: 41
- ❑ Contacted by DWR: 91 of the 100
- ❑ Received Responses: 57 of 91
- ❑ Have some information for ~43 other agencies or projects

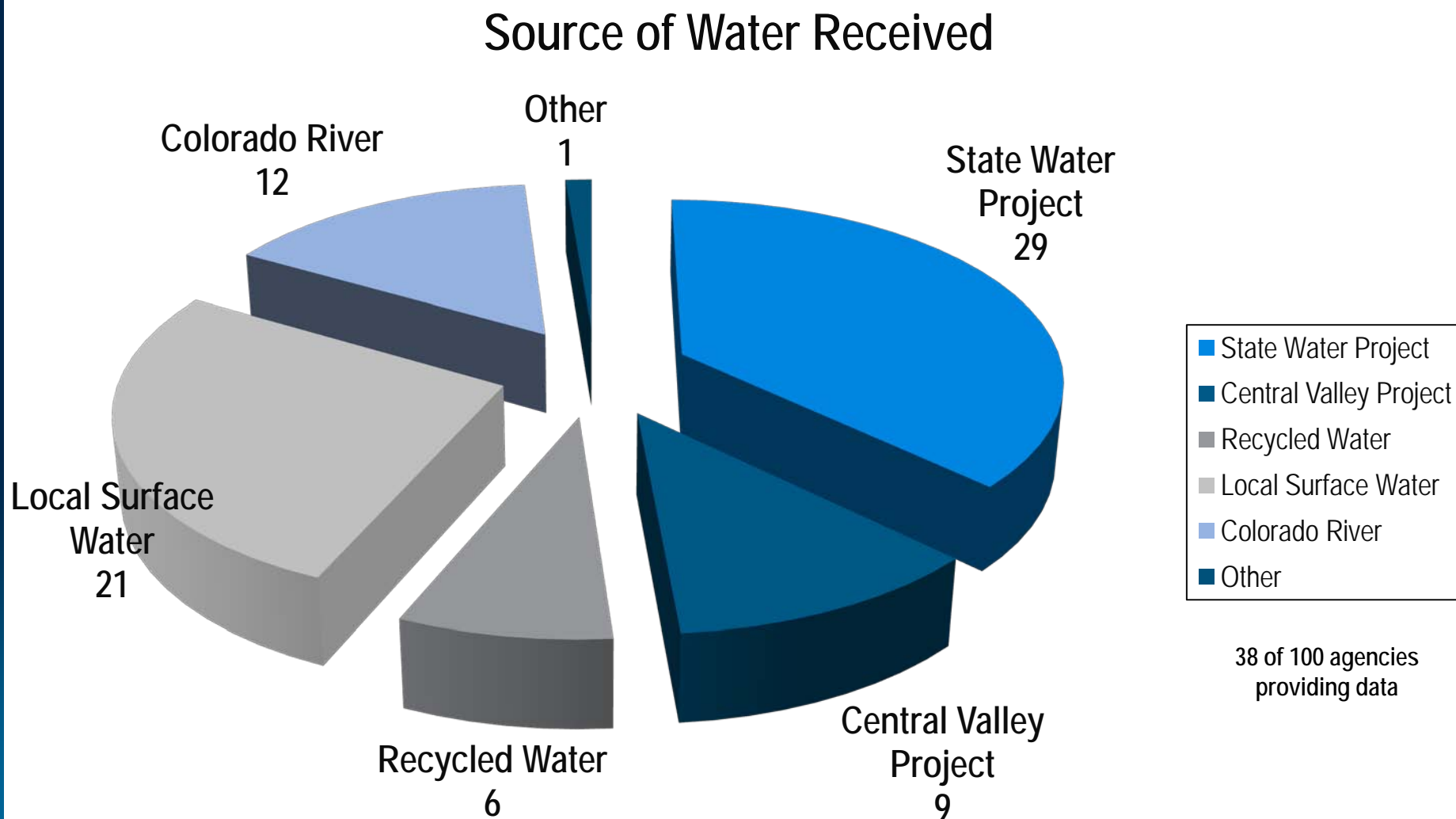
Deliverable #6:

Goal 1

DWR Supplemental Survey Questions

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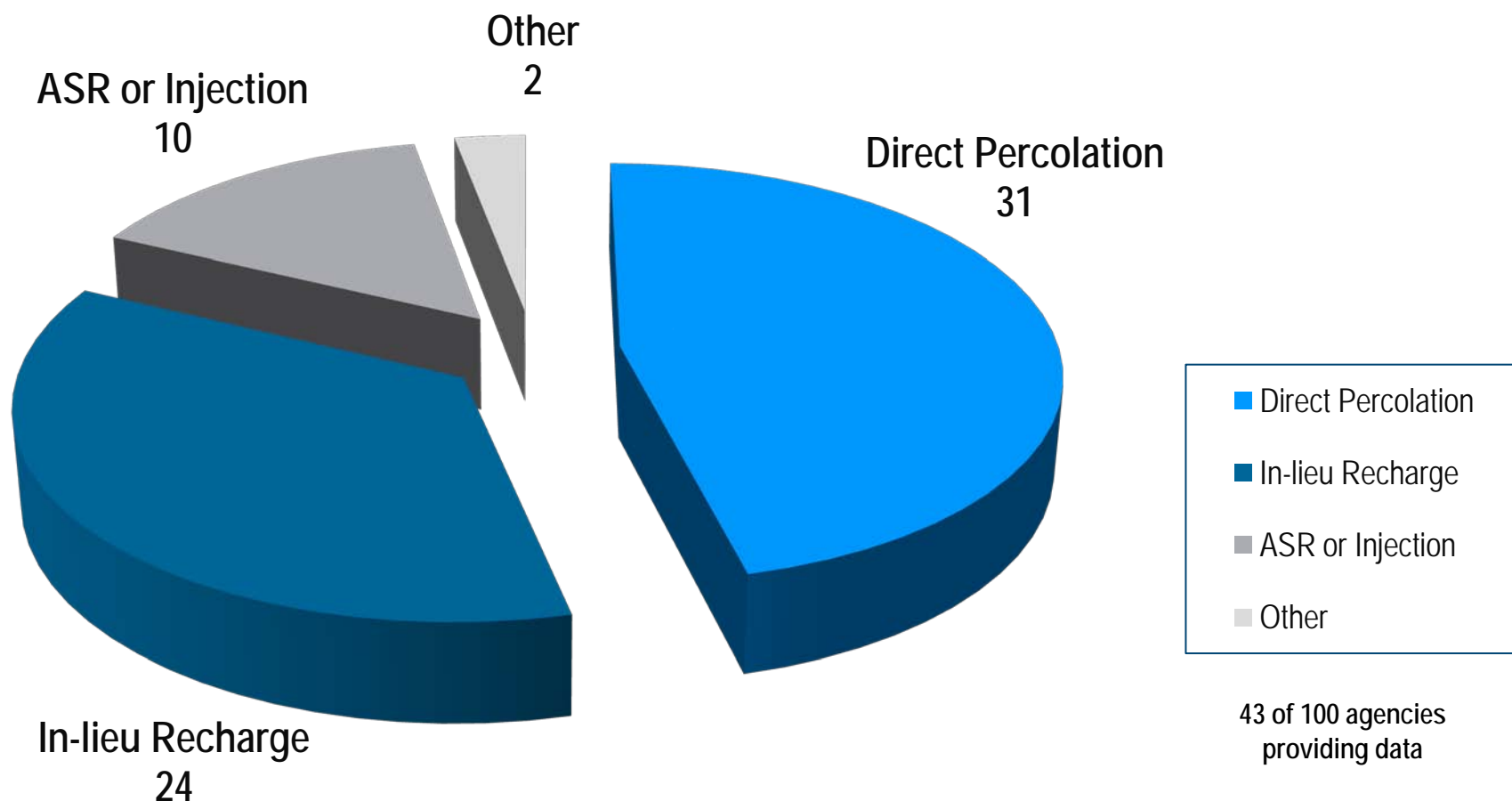
Statewide Source of Recharge Water



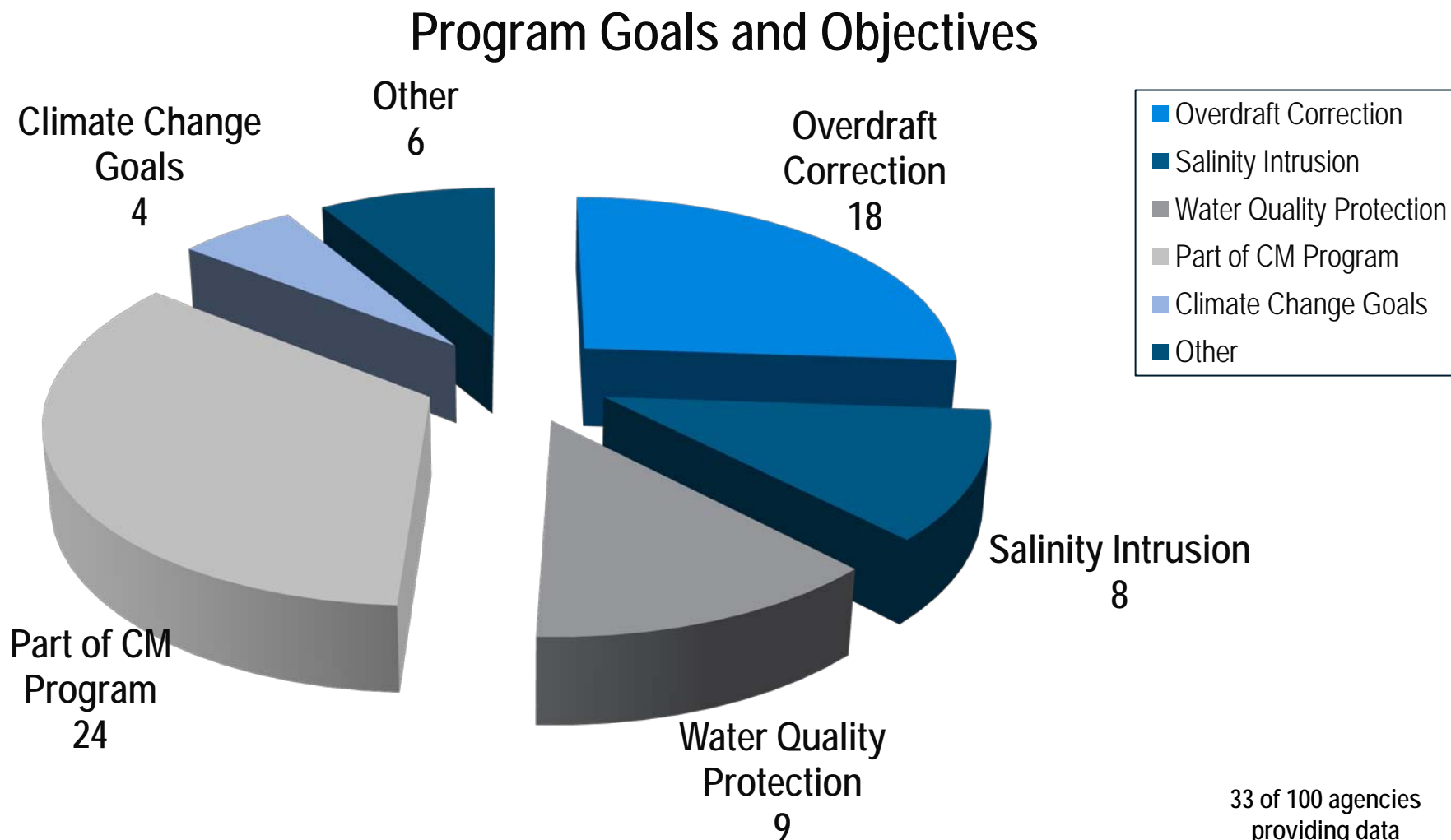
Note: Preliminary Data

Statewide Groundwater Bank Type

Type of Groundwater Bank Identified in Survey

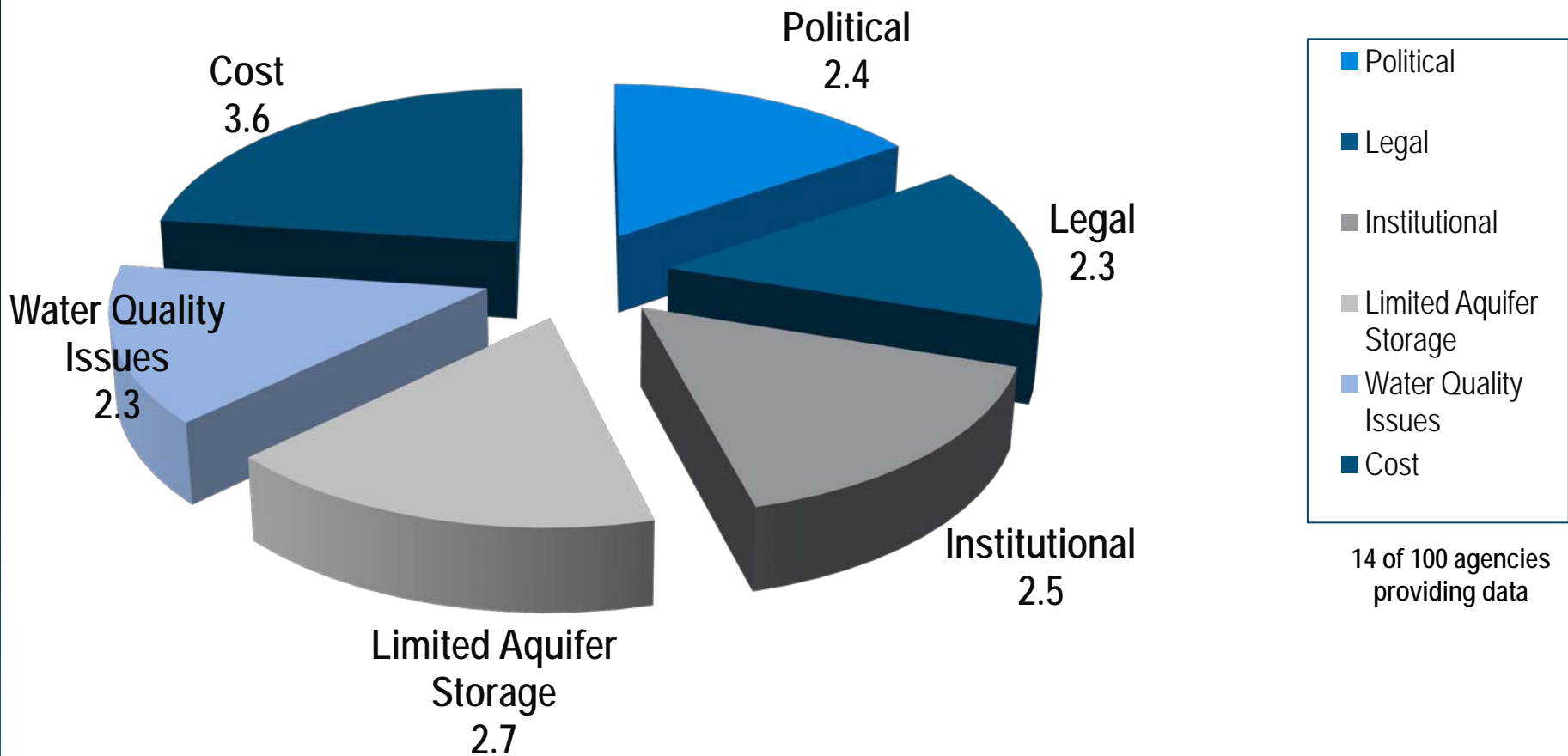


Statewide Program Goals and Objectives



Statewide Constraints

Constraints on Groundwater Bank Development



Note: Preliminary Data

1 = minimal; 3 = moderate; 5 = significant

Deliverable #6:

Conjunctive Management Potential

Goal 2: Determine Future Conjunctive Management Potential

- Identify/map/describe
 1. Available aquifer storage space
 2. Potential recharge areas – AB 359
 3. Sources of available water
 4. Compare with areas of critical need
- Groundwater Recharge Potential as a Result of Flooding
 - DWR System Reoperation Program (SRP) Phase 1 – Plan of Study
 - SBx2-1 (2008) mandated planning and feasibility studies to identify options for optimizing....groundwater storage capacity

Deliverable #6:

Conjunctive Management Potential

Goal 3: Define Constraints

- ❑ Limitations on Conjunctive Management
 1. Water rights issues
 2. Water quality
 3. Limiting shallow water table
 4. Land use
 5. Inconsistent and uncertain regulatory status
 6. Lack of data and tools
 7. Storage and conveyance capacity limitations

Deliverable #6: Status of Goals

1. Inventory existing conjunctive use, recharge and groundwater banking projects
 - ❑ Mostly complete – need additional details for comparison
2. Determine future conjunctive management potential
 - ❑ Ongoing...gathering existing research
3. Define constraints
 - ❑ Ongoing...and learning a lot
 - ❑ SWRCB policy regarding Groundwater Recharge Projects needs to be clarified and discussed

Deliverable #6:

Conjunctive Management Potential

Consistency with CWP 2009 Recommendations

- ❑ Continue funding studies that increase the coordinated use of surface water and groundwater
- ❑ Develop a statewide data management system for CM projects
- ❑ Improve coordination and cooperation among agencies with groundwater responsibilities
- ❑ Manage the use of aquifer storage space for managed recharge
- ❑ Better coordinate groundwater recharge and flood control activities
- ❑ Streamline the SWRCB water rights permitting process

Deliverable #6:

Survey Monkey Summary

1. Great care should be taken in the project descriptions; complete evaluation of costs and benefits; identify costs associated with water transfers; engage IRWMPs.
2. Revisions to water rights permit system – create a flexible system where surface water right holders and groundwater users can work together.
3. Conjunctive management should be defined to include not only SW/GW storage capacity, but SW/GW relationship and effects of over-pumping on SW sources.
4. Focus storage capacity on economically productive portions of aquifer – past estimates have been far too high and lead to unreasonable expectations on GW availability.
5. An integrated interactive map showing where/what GW information has been collected.
6. Analysis of CM projects – discussion of successes and failures.
7. Is there existing expertise, organizational capacity, and political will at the local level to develop CM projects – can the state facilitate or fill these roles?
8. Specific planning and implementation of CM should be left to local agencies.

Groundwater Enhancement Content Deliverable #6

Questions and Comments?

